

WHAT IS CLAIMED IS:

1. An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:
  - 5 (a) the nucleotide sequence set forth in SEQ ID NO: 1;
  - (b) the h2520-59 encoding portion of SEQ ID NO: 1 comprising nucleotides 49-1122 of SEQ ID NO 1;
  - (c) a nucleotide sequence encoding the polypeptide set forth in SEQ ID NO: 2;
  - 10 (d) a nucleotide sequence which hybridizes under moderately or highly stringent conditions to the complement of (a) or (b) or (c), wherein the encoded polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2; and
  - (e) a nucleotide sequence complementary to any of (a)-(d).
- 15 2. An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:
  - (a) a nucleotide sequence encoding a polypeptide that exhibits at least about 70 percent identity to the polypeptide set forth in SEQ ID NO: 2, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2;
  - 20 (b) a nucleotide sequence encoding an allelic variant or splice variant of the nucleotide sequence set forth in SEQ ID NO: 1, wherein the encoded polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2;
  - (c) a nucleotide sequence of SEQ ID NO: 1; (a); or (b) encoding a polypeptide fragment of at least about 25 amino acid residues, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2;
  - 25 (d) a nucleotide sequence encoding a polypeptide that has a substitution and/or deletion of 1 to 358 amino acid residues set forth in SEQ ID NO: 2 wherein the encoded polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2;
  - 30 (e) a nucleotide sequence of SEQ ID NO: 1, or (a)-(d) comprising a

fragment of at least about 16 nucleotides;

(f) a nucleotide sequence which hybridizes under moderately or highly stringent conditions to the complement of any of (a)-(d), wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2; and

5 (g) a nucleotide sequence complementary to any of (a)-(f).

3. An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:

10 (a) a nucleotide sequence encoding a polypeptide set forth in SEQ ID NO: 2 with at least one conservative amino acid substitution, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2;

(b) a nucleotide sequence encoding a polypeptide set forth in SEQ ID NO: 2 with at least one amino acid insertion, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2;

15 (c) a nucleotide sequence encoding a polypeptide set forth in SEQ ID NO: 2 with at least one amino acid deletion, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2;

20 (d) a nucleotide sequence encoding a polypeptide set forth in SEQ ID NO: 2 which has a C- and/or N-terminal truncation, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2;

25 (e) a nucleotide sequence encoding a polypeptide set forth in SEQ ID NO: 2 with at least one modification selected from the group consisting of amino acid substitutions, amino acid insertions, amino acid deletions, C-terminal truncation, and N-terminal truncation, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2;

(f) a nucleotide sequence of (a)-(e) comprising a fragment of at least about 16 nucleotides;

30 (g) a nucleotide sequence which hybridizes under moderately or highly stringent conditions to the complement of any of (a)-(f), wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2; and

(h) a nucleotide sequence complementary to any of (a)-(e).

4. A vector comprising the nucleic acid molecule of claims 1, 2, or 3.
5. A host cell comprising the vector of claim 4.
- 5 6. The host cell of claim 5 that is a eukaryotic cell.
7. The host cell of claim 5 that is a prokaryotic cell.
8. A process of producing a h2520-59 polypeptide comprising culturing the host  
10 cell of claim 5 under suitable conditions to express the polypeptide, and optionally  
isolating the polypeptide from the culture.
9. An isolated polypeptide produced by the process of claim 8.
- 15 10. The process of claim 8, wherein the nucleic acid molecule comprises  
promoter DNA other than the promoter DNA for the native h2520-59 polypeptide  
operatively linked to the nucleotide sequence encoding the h2520-59 polypeptide.
11. The isolated nucleic acid molecule according to claim 2 wherein the percent  
20 identity is determined using a computer program selected from the group consisting  
of GAP, BLASTP, BLASTN, FASTA, BLASTA, BLASTX, BestFit, and the Smith-  
Waterman algorithm.
12. A process for identifying candidate inhibitors of h2520-59 polypeptide  
25 activity or production comprising exposing a cell according to claims 5, 6, or 7 to the  
candidate inhibitors, measuring h2520-59 polypeptide activity or production in said  
cell, and comparing activity of h2520-59 in cells exposed to the candidate inhibitor  
with activity in cells not exposed to the candidate inhibitor.

13. A process for identifying candidate stimulators of h2520-59 polypeptide activity or production comprising exposing a cell according to claims 5, 6, or 7 to the candidate stimulators, measuring h2520-59 polypeptide activity or production in said cell, and comparing activity of h2520-59 in cells exposed to the candidate stimulator with activity in cells not exposed to the candidate stimulator.

14. An isolated polypeptide comprising the amino acid sequence set forth in SEQ ID NO: 2.

15. An isolated polypeptide comprising the amino acid sequence selected from the group consisting of:

(a) the mature amino acid sequence set forth in SEQ ID NO: 2, comprising a mature amino terminus at residue 1, optionally further comprising an amino-terminal methionine;

(b) an amino acid sequence for an ortholog of SEQ ID NO: 2, wherein the ortholog has an activity of the polypeptide set forth in SEQ ID NO: 2;

(c) an amino acid sequence that exhibits at least about 70 percent identity to the amino acid sequence of SEQ ID NO: 2, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2;

(d) a fragment of the amino acid sequence set forth in SEQ ID NO: 2 comprising at least about 25 amino acid residues, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2; and

(e) an amino acid sequence for an allelic variant or splice variant of either the amino acid sequence set forth in SEQ ID NO: 2, or at least one of (a)-(c), wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2.

16. An isolated polypeptide comprising the amino acid sequence selected from the group consisting of:

(a) the amino acid sequence set forth in SEQ ID NO: 2 with at least one conservative amino acid substitution, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2;

(b) the amino acid sequence set forth in SEQ ID NO: 2 with at least one amino acid insertion, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2;

5 (c) the amino acid sequence set forth in SEQ ID NO: 2 with at least one amino acid deletion, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2;

(d) the amino acid sequence set forth in SEQ ID NO: 2 which has a C- and/or N-terminal truncation, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2; and

10 (e) the amino acid sequence set forth in SEQ ID NO: 2, with at least one modification selected from the group consisting of amino acid substitutions, amino acid insertions, amino acid deletions, C-terminal truncation, and N-terminal truncation, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 2.

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17. The polypeptide according to claim 15 or 16 wherein the amino acid at position 31 of SEQ ID NO: 2 is valine, isoleucine, methionine, leucine, phenylalanine, alanine, or norleucine.

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18. The polypeptide according to claim 15 or 16 wherein the amino acid at position 60 of SEQ ID NO: 2 is threonine or serine.

19. The polypeptide according to claim 15 or 16 wherein the amino acid at position 229 of SEQ ID NO: 2 is glutamic acid or aspartic acid.

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20. The polypeptide according to claim 15 or 16 wherein the amino acid at position 258 of SEQ ID NO: 2 is histidine, asparagine, glutamine, lysine, or arginine.

21. The polypeptide according to claim 15 or 16 wherein the amino acid at position 283 of SEQ ID NO: 2 is glycine, proline, or alanine.

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22. The polypeptide according to claim 15 or 16 wherein the amino acid at position 314 of SEQ ID NO: 2 is tryptophan, tyrosine, or phenylalanine.

5 23. An isolated polypeptide encoded by the nucleic acid molecule of any of claims 1, 2, or 3.

10 24. The isolated polypeptide according to claim 15 wherein the percent identity is determined using a computer program selected from the group consisting of GAP, BLASTP, BLASTN, FASTA, BLASTA, BLASTX, BestFit, and the Smith-Waterman algorithm.

25. An antibody produced by immunizing an animal with a peptide comprising an amino acid sequence of SEQ ID NO: 2.

15 26. An antibody or fragment thereof that specifically binds the polypeptide of any of claims 14, 15, or 16.

27. The antibody of claim 26 that is a monoclonal antibody.

20 28. A hybridoma that produces a monoclonal antibody that binds to a peptide comprising an amino acid sequence of SEQ ID NO: 2.

25 29. A method of detecting or quantitating the amount of h2520-59 polypeptide in a sample comprising contacting a sample suspected of containing h2520-59 polypeptide with the anti-h2520-59 antibody or antibody fragment of any of claims 25, 26, or 27 and detecting the binding of said antibody or antibody fragment.

30 30. A selective binding agent or fragment thereof that specifically binds at least one polypeptide wherein said polypeptide comprises the amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence set forth in SEQ ID NO: 2;
- (b) a fragment of at least about 25 amino acids of the amino acid sequence set forth in at least one of SEQ ID NO: 2; and
- (c) a naturally occurring variant of (a) or (b).

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31. The selective binding agent of claim 30 that is an antibody or fragment thereof.

32. The selective binding agent of claim 30 that is a humanized antibody.

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33. The selective binding agent of claim 30 that is a human antibody or fragment thereof.

34. The selective binding agent of claim 30 that is a polyclonal antibody or fragment thereof.

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35. The selective binding agent of claim 30 that is a monoclonal antibody or fragment thereof.

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36. The selective binding agent of claim 30 that is a chimeric antibody or fragment thereof.

37. The selective binding agent of claim 30 that is a complementarity determining region (CDR)-grafted antibody or fragment thereof.

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38. The selective binding agent of claim 30 that is an anti-idiotypic antibody or fragment thereof.

39. The selective binding agent of claim 30 which is an antibody variable region

fragment.

40. The variable region fragment of claim 39 which is a Fab or a Fab' fragment.

5 41. A selective binding agent or fragment thereof comprising at least one complementarity determining region with specificity for a polypeptide having the amino acid sequence of SEQ ID NO: 2.

10 42. The selective binding agent of claim 30 which is bound to a detectable label.

43. The selective binding agent of claim 30 which antagonizes h2520-59 polypeptide biological activity.

15 44. A method for treating, preventing, or ameliorating a disease, condition, or disorder comprising administering to a patient an effective amount of a selective binding agent according to claim 30.

20 45. A selective binding agent produced by immunizing an animal with a polypeptide comprising an amino acid sequence of SEQ ID NO: 2.

46. A hybridoma that produces a selective binding agent capable of binding a polypeptide according to any of claims 14, 15, or 16.

25 47. A composition comprising the polypeptide of any of claims 14, 15, or 16 and a pharmaceutically acceptable formulation agent.

48. The composition of claim 47 wherein the pharmaceutically acceptable formulation agent is a carrier, adjuvant, solubilizer, stabilizer, or anti-oxidant.



49. The composition of claim 47 wherein the polypeptide comprises the mature amino acid sequence set forth in SEQ ID NO: 2.

5 50. A polypeptide comprising a derivative of the polypeptide of any of claims 14, 15, or 16.

51. The polypeptide of claim 50 which is covalently modified with a water-soluble polymer.

10 52. The polypeptide of claim 51 wherein the water-soluble polymer is selected from the group consisting of polyethylene glycol, monomethoxy-polyethylene glycol, dextran, cellulose, poly-(N-vinyl pyrrolidone) polyethylene glycol, propylene glycol homopolymers, polypropylene oxide/ethylene oxide co-polymers, polyoxyethylated polyols, and polyvinyl alcohol.

15 53. A composition comprising a nucleic acid molecule of any of claims 1, 2, or 3 and a pharmaceutically acceptable formulation agent.

20 54. The composition of claim 53 wherein said nucleic acid molecule is contained in a viral vector.

55. A viral vector comprising a nucleic acid molecule of any of claims 1, 2, or 3.

25 56. A fusion polypeptide comprising the polypeptide of any of claims 14, 15, or 16 fused to a heterologous amino acid sequence.

57. The fusion polypeptide of claim 56 wherein the heterologous amino acid sequence is an IgG constant domain or fragment thereof.

58. A method for treating, preventing or ameliorating a medical condition in a mammal resulting from increased levels of h2520-59 polypeptide comprising administering to a patient a therapeutically effective amount of an antagonist selected from the group consisting of selective binding agents, small molecules, peptides, peptide derivatives and antisense oligonucleotides.

59. The method according to claim 58 wherein the medical condition is a mammalian cancer.

60. The method according to claim 59 wherein the mammalian cancer is selected from the group consisting of lung cancer, colon cancer and breast cancer.

61. A method for treating, preventing or ameliorating a medical condition in a mammal resulting from decreased levels of h2520-59 polypeptide comprising administering to a patient a therapeutically effective amount of the polypeptide of any of claims 14, 15, or 16 or the polypeptide encoded by the nucleic acid of any of claims 1, 2, or 3 to said mammal.

62. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject caused by or resulting from abnormal levels of h2520-59 polypeptide comprising:

(a) determining the presence or amount of expression of the polypeptide of any of claims 14, 15, or 16 or the polypeptide encoded by the nucleic acid molecule of any of claims 1, 2, or 3 in a sample; and

(b) comparing the level of h2520-59 polypeptide in a biological, tissue or cellular sample from normal subjects or the subject at a different time, wherein susceptibility to a pathological condition is based on the presence or amount of expression of the polypeptide.

63. A device, comprising:

(a) a membrane suitable for implantation; and

(b) cells encapsulated within said membrane, wherein said cells secrete a polypeptide of any of claims 14, 15, or 16, and wherein said membrane is permeable to said protein.

5 64. A device, comprising:

(a) a membrane suitable for implantation; and

(b) the h2520-59 polypeptide encapsulated within said membrane, wherein said membrane is permeable to the polypeptide.

10 65. A method of identifying a compound which binds to a polypeptide comprising:

(a) contacting the polypeptide of any of claims 14, 15, or 16 with a compound; and

(b) determining the extent of binding of the polypeptide to the compound.

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66. A method of modulating levels of a polypeptide in an animal comprising administering to the animal the nucleic acid molecule of any of claims 1, 2, or 3.

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67. A transgenic non-human mammal comprising the nucleic acid molecule of any of claims 1, 2, or 3.

68. A diagnostic reagent comprising a detectably labeled polynucleotide encoding the amino acid sequence set forth in SEQ ID NO: 2, or a fragment, variant or homolog thereof, including allelic variants and spliced variants thereof.

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69. The diagnostic reagent of claim 68, wherein said labeled polynucleotide is a first-strand cDNA.

70. A method for detecting the presence of h2520-59 nucleic acid molecules in a

biological sample comprising the steps of:

- (a) providing a biological sample suspected of containing h2520-59 nucleic acid molecules;
- (b) contacting the biological sample with a diagnostic reagent according to claim 68 under conditions wherein the diagnostic reagent will hybridize with h2520-59 nucleic acid molecules contained in said biological sample;
- (c) detecting hybridization between h2520-59 nucleic acid molecules in the biological sample and the diagnostic reagent; and
- (d) comparing the level of hybridization between the biological sample and diagnostic reagent with the level of hybridization between a known concentration of h2520-59 nucleic acid molecules and the diagnostic reagent.

71. A method for detecting the presence of h2520-59 nucleic acid molecules in a tissue or cellular sample comprising the steps of:

- (a) providing a tissue or cellular sample suspected of containing h2520-59 nucleic acid molecules;
- (b) contacting the tissue or cellular sample with a diagnostic reagent according to claim 68 under conditions wherein the diagnostic reagent will hybridize with h2520-59 nucleic acid molecules;
- (c) detecting hybridization between h2520-59 nucleic acid molecules in the tissue or cellular sample and the diagnostic reagent; and
- (d) comparing the level of hybridization between the tissue or cellular sample and diagnostic reagent with the level of hybridization between a known concentration of h2520-59 nucleic acid molecules and the diagnostic reagent.

72. The method of claim 70 or 71 wherein said nucleic acid molecule is DNA.

73. The method of claim 70 or 71 wherein said nucleic acid molecule is RNA.

74. An antagonist of h2520-59 polypeptide activity selected from the group

consisting of h2520-59 selective binding agents, small molecules, antisense oligonucleotides, peptides and peptide derivatives having specificity for h2520-59 polypeptide.

5        75.     A polynucleotide according to any one of claims 1 to 3 attached to a solid support.

76.     An array of polynucleotides comprising at least one polynucleotide according to any one of claims 1 to 3.

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